(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) Publication number: **0 259 163**
A3

(12) EUROPEAN PATENT APPLICATION

(21) Application number: **87307786.1**

(51) Int. Cl.4: **G01R 1/073 , H05K 13/08**

(22) Date of filing: **03.09.87**

(30) Priority: **05.09.86 US 904738**

(43) Date of publication of application:
09.03.88 Bulletin 88/10

(84) Designated Contracting States:
DE FR GB NL

(88) Date of deferred publication of the search report:
12.07.89 Bulletin 89/28

(71) Applicant: **TEKTRONIX, INC.**
Howard Vollum Park 14150 S.W. Karl Braun Drive P.O. Box 500
Beaverton Oregon 97077(US)

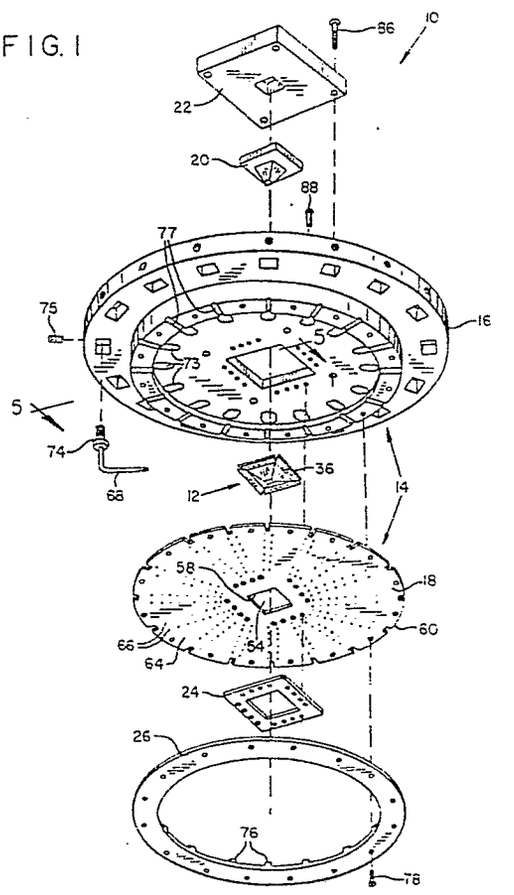
(72) Inventor: **Rath, Dale R.**
Star Route Box 322A
Gales Creek Oregon 97117(US)

(74) Representative: **Burke, Steven David et al**
R.G.C. Jenkins & Co. 26 Caxton Street
London SW1H 0RJ(GB)

(54) Semiconductor wafer probe.

(57) A flexible thin film probe head extends below a probe frame and supports a plurality of wafer contact bumps in planar array. An elastic member is positioned between a rigid plate and the surface of the thin film opposite the contact bumps so as to provide a controlled pressure interconnect between the I/O pads on the wafer and the contact bumps. Interface between the contact bumps and external test equipment is made through constant impedance transmission lines on the probe head and on an adjoining substrate. The two sets of transmission lines are coupled together by mechanical pressure contacts so as to facilitate the substitution of other probe heads having different wafer I/O pad configurations. Interface between the transmission lines on the printed circuit board and a set of semirigid coaxial cables is made by a second pressure interface so as to simplify assembly of the unit.

FIG. 1



EP 0 259 163 A3

European Patent Office

EUROPEAN SEARCH REPORT

Application number

EP 87 30 7786

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.4)
X	EP-A-0 107 323 (ACCUTEST) * Page 5, paragraphs 4,5; claims 1-6,8; figures 1,5,8 *	1-4,10, 11	G 01 R 1/073 H 05 K 13/08
Y		5,6	
A		12,13	
	--		
X	GB-A-1 104 090 (IBM) * Page 1, right-hand column, lines 45-61; page 2, lines 55-119; page 3, lines 52-62; page 4, lines 36-46; page 5, lines 7-18,48-63; figures 1-4 *	2,3,16	
A		4-6,10, 11,18	
	--		
X	US-A-4 065 717 (KATTNER et al.) * Column 2, lines 18-40; column 4, lines 5-63; column 5, lines 22-24; column 6, lines 5-13,35-43; figures 1,3,6,7 *	1,5,6, 9	TECHNICAL FIELDS SEARCHED (Int. Cl.4) G 01 R H 05 K H 01 R
A		3,4,10-13,16-18	
	--		
X	US-A-4 516 072 (MARPOE, Jr.) * Column 1, lines 51-58; column 2, lines 3-14; figures 1,5 *	1,3	
A		4,10,11	
	--		
X	IBM TECHNICAL DISCLOSURE BULLETIN, vol. 13, no. 5, Ocotber 1970, pages 1263-1264; New York, US ./.		

[illegible]

Place of search	Date of completion of the search	Examiner
THE HAGUE	27-12-1988	HARRISON

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

EPO Form 1503 03 82

European Patent Office

EUROPEAN SEARCH REPORT

Application number

EP 87 30 7786

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int Cl 4)
	F.M. REINHART: "Membrane type probe"		
	* Whole article *	16-18	
Y		5,6	
A		7,8,10-12	
	--		
A	EP-A-0 170 392 (NEC)		
	* Page 2, paragraph 2; figure 2 *	12,13	

TECHNICAL FIELDS SEARCHED (Int. Cl 4)

Place of search	Date of completion of the search	Examiner

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

EPO Form 1503 03 82